

Background

Polychlorinated biphenyls (PCBs) are man-made, chlorinated organic chemicals produced primarily for their insulating capabilities and chemical stability. They were banned from production in 1979, but persist in the environment and have a strong tendency to accumulate in fish tissue. PCBs cause a variety of health effects including cancer, and impacts to the nervous, immune, reproductive and endocrine systems.

What is a TMDL?

When a lake or stream does not meet Water Quality Standards (WQS), a study must be completed to determine the amount of a pollutant that can be put in a water body from point sources and nonpoint sources and still meet WQS. Section 303(d) of the Federal Clean Water Act requires states to list the waters that are not attaining WQS and define the amount of pollutant that a water body can receive and still meet WQS. This amount is defined as a total maximum daily load (TMDL). In other words, a TMDL is used as a short hand acronym to describe the process used to determine how much pollutant load a lake or stream can assimilate. This TMDL (otherwise referred to as maximum allowable load or loading capacity) is allocated to point sources that receive a wasteload allocation (WLA), and nonpoint sources that receive a load allocation (LA). A TMDL accounts for seasonal variations in water quality, and includes a margin of safety (MOS) to account for technical uncertainties such as model predictions, and analysis of technical data.

What are Water Quality Standards?

Water Quality Standards are state rules established to protect the surface waters of the state. These rules define the water quality goals for a lake or stream. ***What waters are addressed under the TMDL?***

This TMDL is unique because it focuses solely on inland waters primarily impaired by atmospheric deposition of PCBs. It does not address waters influenced by the Great Lakes (including some inland waters along the coastline that are influenced by the Great Lakes), connecting waters to the Great Lakes, and PCB legacy sites. The Great Lakes, connecting channels, and inland waters influenced by the Great Lakes will be covered under a separate TMDL. Sediment remediation activities will continue to address PCB legacy site contamination.

What is the numeric TMDL target?

TMDL submittals must include a description of any applicable WQS (in the form of numeric or narrative criteria), and must also identify numeric water quality targets, which are quantitative values used to measure whether or not WQS are being attained. Depending on the designated use being addressed by the TMDL, the criteria used for setting a TMDL target may be based on human health, aquatic life, or wildlife criteria. Designated uses are those water uses that must be achieved and protected using WQS. Where possible, the water quality criterion for the pollutant causing impairment is used as the numeric water quality target for TMDL development. Water quality standards can be in a form that is not directly amenable for use in

TMDL development and may need to be translated into a numeric target value for TMDLs. A fish tissue concentration was chosen as the target for this TMDL, since the consumption of fish by humans and wildlife is the most significant route of exposure. Lake trout were used to determine PCB load reductions, and resulting compliance with the TMDL. The target is a fish tissue PCB concentration of 0.023 mg/kg.

What reductions in PCBs are necessary?

A 94% reduction from current (2010) statewide average atmospheric PCB concentrations of 0.115 ng/m³ is needed to meet the allowable PCB “load” of 0.007 ng/m³.

How are the allowable loads allocated?

TMDL Components	Units	Statewide
Target Level and Reduction Factor		
Target Fish PCB Concentration (Fish Tissue Residue Value)	mg/kg	0.023
PCB Concentration for Standard Length Lake Trout	mg/kg	0.378
Reduction Factor		94%
PCB Load for Baseline Year 2010		
Point Source Load	lbs/day	1.57E-06
Maximum Daily Nonpoint Source Concentration	ng/m ³	0.571
Final TMDL		
Margin of Safety	Implicit	
Wasteload Allocation (WLA)	lbs/day	1.57E-06
Load Allocation (LA) (Maximum Daily Concentration Used as a Surrogate)	ng/m ³	0.034
PCB Load Allocation for In-State and Out-of-State Deposition Sources		
In-State Contribution to LA		45%
Out-of-State Contribution to LA		55%
Necessary Reduction from Anthropogenic Emission Sources for both In-State and Out-of-State Contribution		94%

What are the next steps?

Once approved, states are required to implement the TMDL so that water bodies covered by the TMDL will meet water quality standards. The TMDL is implemented through existing programs, such as NPDES permits for point source discharges and nonpoint source control programs, to achieve the necessary pollutant reductions.

Written comments on this TMDL are being accepted until February 19, 2013. Written comments on the draft TMDL may be submitted to Ms. Marcy Knoll, Department of Environmental Quality, Water Resources Division, P.O. Box 30458, Lansing, Michigan 48909 7958, or via e-mail at knollm@michigan.gov.